Richmond Refinery LPS Bulletin – Safety

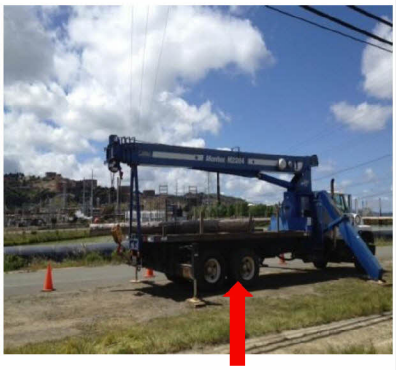
Electrical Shock (page 1 of 2)

Impact ERM: 36499

Location: PG&E overhead line near DWOP pump station

Contact Information:
Mauricio Mejicanos
510-242-9459
lmjc@chevron.com

Reference:
Investigation # 22622



Boom truck that was removing pole tops from the ground.

Tenets of Operations Violated:

#2 - Always operate in safe and controlled conditions.
#4 - Always follow safe work practices and procedures.
#9 - Always follow written procedures for high risk or unusual situations.

Every Task…
The Right Way…
Every Time.

Similar incident that resulted in a fatality.

IF Report - Electrical Fatality

Incident Description:

On April 25, 2012, a contractor crew was tasked to cut the top sections of electrical poles located on Basin Street (next to the 250 ft channel) at the Chevron Richmond Refinery. On April 26th, the same crew was tasked with picking up the sections of poles left on the ground from the previous day's work with a crane. The crane truck was positioned directly under an uninsulated 12KV overhead power line. At approximately 12:30 PM, the crew was rigging a second pole section. The crane Operator raised the boom to place it on the bed of the truck. The line journeyman was on the truck receiving the load from the ground man. The ground man attempted to climb the right rear end of the truck to help the line journeyman with the section of the pole. This action resulted in the ground man receiving an electrical shock, which caused burns on both his hands and right foot. The Chevron Fire Department was notified immediately and the ground man was sent to the hospital for medical assistance where the ground man was treated with first aid.

Investigation Findings:

1) A critical lift plan was not in place as defined in RI-390.
2) There was no designated spotter for the boom position as required in RI-389.
3) Crane truck operator raised boom without retracting and was unclear of the position of boom.
4) No mitigation was taken for the uninsulated 12KV lines and the crane truck was not grounded.
5) The ground man attempted to climb on the right rear end of the crane truck to help the lineman with pole, which was not in compliance with the procedures set forth in RI-389 and RI-390.

Lessons Learned:

1) Operational Discipline in completing a thorough JSA/JHA is key to identifying and mitigating risks prior to work on High / Medium risk activities.
2) When planning and engaging in work with cranes around overhead power lines (insulated or uninsulated), conduct a thorough review of the requirements in RI-389 and RI390. Prior to engaging in the actual work, the team should have a complete understanding of the requirements in both Refinery Instructions.

Recommendations:

1) Capital Projects group to develop and implement a procedure mandating high / medium risk contractors, as defined by CHESM, to have a defined written work package.
2) Align RI-389 to RI-390. (i.e., RI-389 should make reference to the requirements in RI-390 about a critical lift plan, and visa versa RI-390 should refer to the requirements of RI-389.)
3) RI-390 to adopt Chevron's San Joaquin Business Unit "Look up and Live" Process to reduce incidents of lifting equipment into power lines.
4) Mandate Contractors to review with their employees the Richmond Refinery Short Service Employee Policy. Contractor to share incident / lessons learned during their LPS Stewardship meetings & Contractor Safety Forum in 3Q2012.

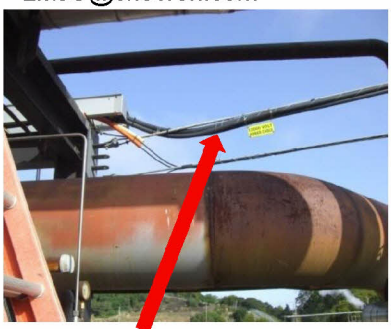
Richmond Refinery LPS Bulletin – Safety

Electrical Shock (page 2 of 2)

Impact ERM: 36499

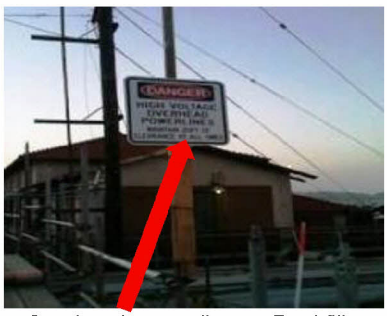
Location: PG&E overhead line near DWOP pump station

Contact Information:
Mauricio Mejicanos
510-242-9212
LMJC@chevron.com



12 KV line next to planned scaffolding job in SRU

12 KV line next to stairway rail at the Booster Deck in So. Isomax



Overhead power lines – Rockfill area (Long Wharf)

Every Task…
The Right Way…
Every Time.

Related High Voltage Discussions:

As a result of discussing the crane truck Alert (posted 4/26/12) at the Richmond Refinery, the following electrical work discussions were held:

Stop Work Authority used at SRU

• Brand Scaffolding was starting a job to erect scaffold for some instrument work at the SRU. As they began the job, they noticed a 12 KV line within 10' of their planned job. They Stop/Paused the work and went to operations for information on this marked 12 KV line. Operations got Safety and Electrical SME's involved. Final outcome of the Stop/Pause Work was the work was safely done from a ladder and the ladder was able to be positioned outside the 5' stay out zone (non-qualified personnel).

Electrical Verification at the Booster Deck in SISO

• The above story was being shared at the Hydro weekly safety meeting and one of the Hydro operators asked what the proper stay off distance was for the general operator at the SISO compressor deck 12 KV line. Safety and the Electrical SME got involved in the question. The Electrical SME indicated that this cable had additional shielding and there was no stay off distance in this case.

Capital Projects Workers Post Warning Signs

• After hearing about the electrical shock incident, Capital Projects contractors posted warning signs in their work area indicating the presence of overhead power lines and minimum clearance is required at all times.

Recommendation:

- Review and understand RI-389, Electrical Safe Work Practices.
- Review and understand RI-390, Crane & Rigging Practices

Shock Hazard Approach Boundaries *(see Appendix I in RI-389 for more details)*

Hot, restricted, and limited work is determined by "boundary" distances from the exposed energized part to any part of the employee.

Nominal Phase to Phase Voltage	Limited Approach Boundary		Restricted Approach Boundary	Prohibited Approach Boundary (Hot Work)
	All non-qualified people must maintain these clearance distances.		*Only qualified people may get this close. Before a qualified person may cross this boundary, special protective equipment and procedures are required.	When you are this close, it is considered to be the same as making contact with the conductor. This is considered to be Hot Work.
	**Moveable conductor	***Fixed conductor	Includes inadvertent movement adder	
110 & 220 V	10 ft. 0 in.	3 ft. 6 in.	Avoid contact	Avoid contact
480 V	10 ft. 0 in.	3 ft. 6 in.	1 ft. 0 in.	0 ft. 1 in.
2,400 to 13,800 V	10 ft. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
16.5 kV	10 ft. 0 in.	6 ft. 0 in.	2 ft. 7 in.	0 ft. 10 in.
66 kV	10 ft. 0 in.	8 ft. 0 in.	3 ft. 3 in.	2 ft. 1 in.
220 kV	13 ft. 0 in.	13 ft. 0 in.	5 ft. 3 in.	4 ft. 9 in.

Definition of Exposed *(as applied to live parts) Capable of being inadvertently touched or approached nearer than a safe distance by a person. It applies to parts that are not suitably guarded, isolated, or insulated.*